Knowledge platforms and local-level knowledge sharing

by Heather Creech[1], Director, Global Connectivity,
International Institute for Sustainable Development
With case study contributions from Michelle Laurie, Ben Akoh and Leslie Paas
A Participant Reflection Paper prepared for the 2012 IDRC Canadian Learning Forum on Virtual Platforms, Knowledge Management and International Development. Winnipeg, February 7-8, 2012.

Abstract

The International Institute for Sustainable Development (IISD) advances policy recommendations and uses communications technologies to promote sustainable development. Using the Internet, IISD's report on international negotiations and shares knowledge from collaborative, global research and development projects. This papers, however, focuses on how locally-generated knowledge can be shared at the community level and it provides three case studies of how local actors are using traditional and online approaches. It identifies eight lessons from local knowledge sharing that are also applicable to web-based knowledge management, as well as further reflections after the IDRC Learning Forum.

A) Introduction

The International Institute for Sustainable Development (IISD) advances policy recommendations on international trade and investment, economic policy, climate change, measurement and assessment, natural resources management, and the enabling role of communications technologies in these areas to promote sustainable development. Through the Internet, we report on international negotiations and share knowledge gained through collaborative projects with global partners, resulting in more rigorous research, capacity building in developing countries and better dialogue between North and South.

IISD's vision is "better living for all—sustainably"; its mission is to champion innovation, thus enabling societies to live sustainably. A registered charitable organization in Canada and the United States, IISD receives core operating support from the Canadian International Development Agency (CIDA), the International Development Research Centre (IDRC), and the Province of Manitoba. The Institute also receives project funding from numerous governments inside and outside Canada, as well as United Nations agencies, foundations and the private sector.

Many of the papers presented at the 2012 IDRC Learning Forum on Virtual Platforms, Knowledge Management and International Development focused on the knowledge

[1] Heather Creech is the Director of Global Connectivity at IISD, responsible for the delivery of IISD's program of work on how technology, in particular communications technology, is supporting and changing how we organize our governing systems, our economies and our cultures in unprecedented ways. She brings to her work extensive experience in Canada and the South Pacific, establishing networks and providing information and training services in the legal and marine science fields.

management strategies of specific organizations or initiatives, and their experience with designing virtual platforms to deliver knowledge and encourage knowledge exchange.

This paper draws upon IISD's research and evaluation work and looks at VPs through a somewhat different lens: how VPs can serve local-level knowledge seekers and providers.

It has been over a decade since the 1998 World Bank report on the role of knowledge in development concluded that "access to financial, technical, and medical knowledge is crucial to improving the health and living standards of the poor". Yet, despite continued research, the perception persists that knowledge about environment and development -- what is working, what is not, and why – is not being effectively captured, shared or communicated at the local level.

Local actors are formal or informal groups based in rural or urban areas. They include communities, indigenous peoples, village associations, local non-governmental organizations (NGOs), micro-enterprises, social and environmental entrepreneurs, youth and women's groups, cooperatives, self-help groups, savings groups, local authorities and municipalities that are applying their own expertise and knowledge towards resolving their immediate and long term challenges.

While there is considerable experience and expertise emerging on the use of VPs to support policy makers and practitioners, the United Nations Development Program (UNDP) and others are now exploring how to best support local actors to contribute their knowledge through these mechanisms.[i] Specifically, to ask:

1. How can sustainable development practitioners mobilize this local knowledge more effectively to scale up and replicate solutions on a global scale? and
2. In particular, how can online platforms support local actors to contribute their knowledge from and about the local level?

B) Characteristics and modalities of local level knowledge

Defining "knowledge" and "knowledge processes" is an ongoing debate among those working in knowledge management. There is a growing view that knowledge management initiatives should not underestimate the complexity of bringing people together to deal with challenges through dialogue and joint problem-solving and that the building of relationships, as much as technology solutions for online platform development, should be front and centre.

To support knowledge exchange among local actors, and between local actors and the policy/decision makers, it may be helpful to first consider the **level of engagement of the local actor** (See Table 1 on the next page).

Of course, not all initiatives fall into one column on the continuum. For example, some local initiatives, while primarily designed to flow information of value to the local level, may also incorporate feedback loops, turning receivers into sharers, and the sharing of knowledge, fostered by intermediaries, may lead to independent knowledge-based actions.

1. Case Studies

Three case studies of local-level knowledge sharing will illustrate these dynamics. While the first two do not rely on an web-based platforms, they do present features of successful local knowledge exchange that are important to bear in mind when developing online platforms. The third case study presents our experience in using an online platform for fostering knowledge exchange among locally based social and environmental entrepreneurs.

Case Study 1: Community Knowledge workers in Uganda[ii]

In 2002, working with MTN Uganda (a telecommunications provider), Grameen Foundation[iii] created a Village Phone service in Uganda that provided women's groups with a mobile phone kit through which local villagers could place calls. This initiative expanded through a suite of mobile phone applications to provide instant information on business, agriculture, health, environment and the weather to rural Ugandan poor and remote communities.[iv] To receive information, rural farmers send key words via SMS to a short code. The keyword is used as a search query in a database developed and hosted by the partners, and the results are returned to the requester's phone.

As an extension of this project, in 2008 the Grameen Foundation created the Community Knowledge Worker (CKW) project – a network of locally-based "trusted intermediaries" who interface between external content producers and small-holder farmer groups to research knowledge needs and to act as the conduit through which centralized information can be disseminated to the farmers, in order to improve productivity, increase revenue and support other needs[v]. Specific types of information that the CKWs transmit include:

- advice on land preparation based on the available weather forecasts especially on expected rainfall;
- information on pests that could be relevant for the farmers - farmers could send pictures of the infested crop and get help with diagnosis;
- information about value-chains, market prices and whole-sale locations and their prices; and
- information about available storage places.

CKWs are themselves farmers nominated by their villagers and members in their local cooperative farmer groups. They must speak English as it is the language of the training and information from the foundation, and they must then be able to disseminate received knowledge to their groups. CKW's must also be innovative in their farming practices and be willing to serve their communities.

After their appointment and training they received a rented smart phone kit, a shirt, a hat, a vest and a solar or bicycle-operated battery recharge unit to recharge the community cell phones.

Table 1: Spectrum of Involvement of Local-Level Knowledge Makers				
Level	**Indirect beneficiaries**	**Receivers**	**Sharers**	**Actors**
Characteristics & Modes	Knowledge is exchanged among development practitioners and policy makers about the local level, for the benefit of the local level. Examples: a. Communities of Practice (COPs): Practitioner to practitioner / Individual-individual knowledge exchange b. Institution networks/partner-ships, alliances: more formal arrangements among groups of institutions	Local actors are primarily recipients of information / knowledge transfer, where information is provided via TV; radio; newspapers; Internet and other means; with feedback loops. Local actors can use those same vehicles to comment or request more information.	Local actors engage in knowledge sharing and peer learning, catalyzed and supported through a bridging organization (i.e. a local, national or international agency) that connects: **Local to local:** by organizing meetings, managing participatory processes, documenting lessons, setting up study tours and exchanges, including twinning arrangements, using local communications tools and channels (print and video; local newspapers, radio, TV, Internet) to share knowledge. **Local to national actors:** by preparing policy briefs, setting up meetings between local/policy makers, using regional/national/ international communications tools and channels (print and video; local newspapers, radio, TV, Internet) to share knowledge	Knowledge sharing is embedded in local action a. **Self-organized** (local to local) Where local actors mobilize independently of any catalyst or intervention from other international/national/local bridging agencies, such as: • Producer cooperatives; • Mobilizing campaigns – raising awareness of environmental threats (such as damage to rivers from mining pollution) or organizing public protests (the twitter revolution in Iran; the red shirt protests in Bangkok; the Arab Spring) **b. Joint action** (Local to policy maker) – Co-management: Where the local actors and national / regional authorities work together to manage a resource (ecosystem, watershed, forest or herd). Highly structured; traditional and scientific knowledge are embedded in the process.

The phone is preloaded with applications targeted at crop production, such as land preparation and weather projections. All applications have the capability to store and forward data in instances of dropped connectivity. Costs for using mobile network data services are currently subsidized, allowing free access by farmers.

In return, CKWs must meet target objectives such as administering information services to their communities, conducting a certain number of household surveys, providing GPS location data of importance, and registering farmers to use the services.

As of July 2011, 463 CKWs had registered over 20,000 farmers and households. By the end of 2011, they were hoping to meet their target of close to 800 CKWs. Based on the recently conducted review of the CKWs and AppLab programs:

- 75 percent of the farmers reported that they found the information very useful;
- 30 percent of farmers were able to take their products to a better market;
- 30 percent were able to negotiate better deals in terms of pricing; and
- 30 percent changed their practice and planted different crops because of the forecasted weather information received through the system, and consequently produced good results.[vi]

Case Study 2: Forest-based livelihoods development interventions in Lao PDR[vii]

A second case study in Lao shows how it is possible to mobilize local knowledge without the use of any ICT-enabled mechanism. In 2006, the International Union for the Conservation of Nature (IUCN) researched the factors influencing the successful replication of various components of the IUCN Non-Timber Forests Products (NTFP) pilot project at Ban Nampheng. These components included:

- the creation of rice banks to address food insecurity that drives over-exploitation of NTFP resources;
- forest land allocation and planning for sustainable NTFP use and management;
- NTFP marketing groups and a village development fund created by a local tax on sales;
- NTFP processing and grading; and
- domestication of NTFP species with high market demand.

Most of these interventions from the pilot-project village are now found to some extent across the whole country. In Oudomxai Province, for example, government officials estimate that over 80% of the village-level activities in current forest-sector projects have been copied from the former IUCN NTFP Project.

The following is a key excerpt from the report:

> *"A large number of mechanisms were found to have contributed to local replication and include private visits to pilot villages, promotion by local government staff who are aware of the pilot project, training programmes undertaken by ex-project staff, recruitment of ex-project staff by other projects, information exchanged through the media and via gossip, meetings and networking among village officials, and relocation of households from the pilot village to another village. … From the local villager perspective, it was felt that project-sponsored visits/ study tours of villagers to the pilot village were the most effective means of spreading the ideas among users."*[viii]

The report contained many detailed suggestions for supporting upscaling and replication, of which, the following are applicable to the question of local-to-local and local-to-policymaker knowledge transfer. Relevant excerpts (*with emphasis added*) include:

- As soon as there are demonstrable successful results … *village exchange visits should be promoted and supported by a project. Training should be provided to villagers who have been involved in the projects activities to be guides.*
- Training should also be provided to government officials to organise and facilitate such village exchange visits.
- Given the potential for effective sharing of experience through *formal and informal meetings of local leaders,* some support (particularly training) could be given to ensure that these meetings are organised and run well.
- The capacity of local village leaders in the vicinity of a forest-based livelihoods project should be enhanced to promote sideways scaling by:
    - providing a *village leadership development programme* through exchange visits, mentoring, and awareness-raising regarding relevant social organisation, rights and welfare topics; and
    - *creating a village network for sharing NTFP market knowledge and lessons regarding social organisations and regulatory frameworks to support NTFP development.*
- *Agriculture and forestry extension staff require a basic set of facilitation, communication, and participatory process management skills* in order to participate in sideways scaling up of forest-based livelihoods interventions. They also need to be encouraged and given responsibility, and if possible, provided with incentives.

Case Study 3: The Entrepreneurs Toolkit: www.entrepreneurstoolkit.org[ix]

The Entrepreneur's Toolkit is an internet-based social media service aiming to support entrepreneurs who are delivering social, environmental and economic benefits – achieving the "triple bottom line". It is a joint initiative of the SEED Initiative, the International Institute for Sustainable Development (IISD) and the North America Commission for Economic Cooperation (CEC). While its content is globally relevant, its main targets are developing countries and regions. The Toolkit provides ideas, resources and examples on how to:

- start and sustain a micro, small or medium enterprise in accordance with sector or country-specific conditions and support structures; and
- strengthen business performance and financial success while attaining positive environmental and social objectives.

Initially, the website was intended to be a static resource to present basic information on how to set up a micro social/environmental enterprise, drawing content from several other products of the CEC and IISD. But in the early stages of development, the partners agreed to experiment with a social media approach that would engage users more directly in adding content to the site. Based on the same software as *Wikipedia*[x], the Entrepreneur's Toolkit is now designed to allow users to showcase their enterprises and share country-specific information with other interested entrepreneurs. The Toolkit organizers provide the base content and thematic structure; users provide on-the-ground cases and up-to-date information.

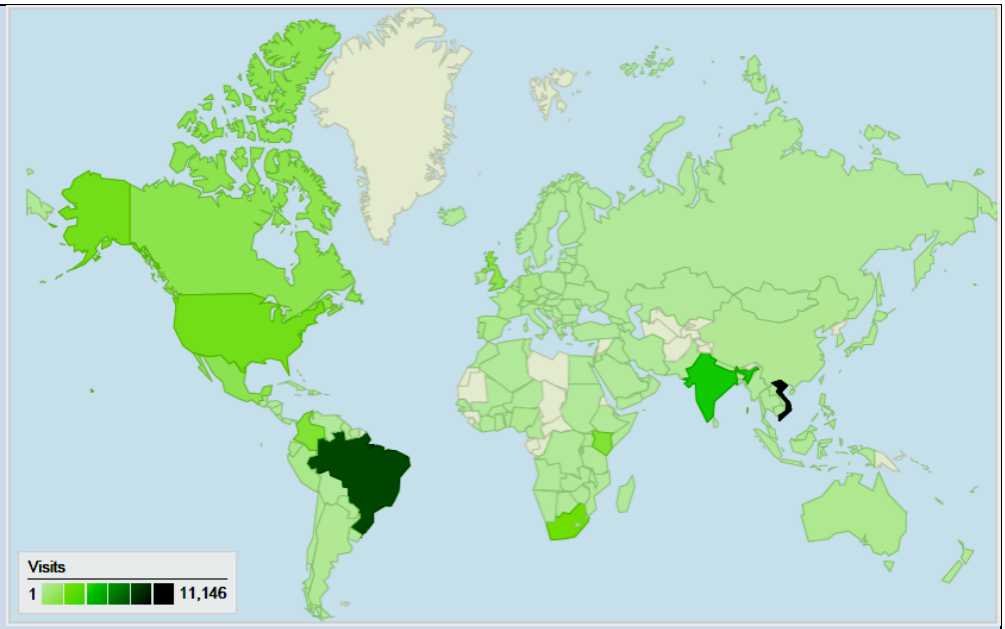
Currently, the toolkit contains 313 short online articles ("pages") that have been written by authors from more than 10 countries around the world, including: Brazil, Canada, Colombia, Guyana, India, Kenya, Mexico, Peru, Philippines, South Africa, USA and Vietnam. These pages are published in English, French, Portuguese, Spanish or Vietnamese.

Users can browse content by Topic; Sector; and Country/Region, or apply the search tool to find specific content, such as "Ecotourism in South Africa". Or, they can access general information pages, such as "Business Planning for Sustainable Enterprises" or "How to Conduct Market Research". The content also includes a growing number of cases that describe actual entrepreneurial initiatives around the world.

Toolkit statistics also show that the service is of interest to people from around the globe. From October 2010 to date, visitors have accessed from 172 different countries, with 7 of the top 10 countries accessing the Toolkit being developing countries which are located in 4 major continents. Vietnam, Brazil, India, and South Africa top the charts in terms of viewership, as shown in the map and graphs on the following page.

Top10 countries visiting the Toolkit

Country
Vietnam
Brazil
India
S. Africa
U.S.A.
Kenya
Colombia
U.K.
Canada
Mexico



The Toolkit holds some promise as a mechanism by which the founding organizations and potential strategic partners can reach and support entrepreneurs and businesses who aim to contribute to a green economy. In reviewing usage to date, we are currently considering the following recommendations:

a. Governance and administration

Engaging partners on a sustained basis has been challenging, particularly with staffing changes at one organization, and the responsibility for management and development of the Toolkit has been left up to IISD as the host. This is due in part to the learning curve among partners who are more used to static approaches to web development (i.e. posting documents and notices to

a site) and who may not yet understand the long-term investments needed to grow and maintain a dynamic social media-based platform.

To address this, we are discussing the following recommendations with the current partners :

1. seek out and include at least one and possibly two additional partners in the Toolkit;
2. schedule semi-annual meetings of the partners in order to enable constant innovation, growth and improvement of the Toolkit; and
3. establish a continuous and well-defined role for Toolkit administration that takes into account the Toolkit's growth and the additional time required for management.

b. Content Production and alignment with an online learning management system
The base content was provided by IISD and the CEC, with country specific information commissioned from various organizations. While use-levels of the Toolkit are promising, we have not yet achieved the spontaneous contributions from entrepreneurs, outside of a page or two from the Philippines and India, and pages from companies seeking to promote unrelated products – which were subsequently removed!

In keeping with lessons from on local-level knowledge exchange, we have conducted significant background research into the knowledge and capacity needs of social and environmental entrepreneurs.[xi] One of the findings relates to the need for capacity building in triple bottom-line planning; and we have therefore moved to an online learning management system (via Moodle) to develop and pilot-test online courses that facilitate peer learning, guided by an instructor, with course materials, case studies, and other content. We have used this online course to flow contributions from the learners into the Entrepreneurs' Toolkit.

We have also used other means to encourage contributions to the wiki, including commissioning and paying for additional content to fill in gaps in the Toolkit; and using interns placed with various organizations in a number of countries to add content drawn from their host organizations and related contacts.

Recognizing that we may not achieve independent user-generated content any time soon, we are exploring more proactive approaches to content development. We have four approaches already under way:

1. develop a plan for addressing content gaps according to country/region;
2. forge strategic partnerships to enhance the user base and increase prestige/quality of the Toolkit's content. For example, we are discussing with an academic institution to produce country business guides for micro/small entrepreneurs;
3. IISD has sourced funding for another two years for several IISD Interns to provide content to the Toolkit, as they work with host organizations in Latin America; and
4. the SEED research and e-learning activities will be expanded to gather additional case stories from participants in those activities for use in the Toolkit.

c. Marketing and Outreach

Although the Toolkit has not actually been marketed directly to locally based entrepreneurs, interest amongst this target market in the service is mounting. Recently, entrepreneurs and organizations working in Burkina Faso, China, the Philippines, Scotland and Sweden, as well as the International Finance Corporation, have contacted Toolkit administrators in order to become contributors and/or partners.

In a recent survey of SEED Initiative Award applicants, nearly all respondents indicated that they would like to contribute their cases to the Entrepreneur's Toolkit, and we are working with them to do so. It is now time to put a marketing plan in place and to:

1. create an outreach plan that includes selecting and accruing strategic partners, and defining the levels and types of contribution from each partner (i.e. funding or in kind support such as content creation);
2. explore adopting a business model for the Toolkit that includes potential revenue-generating activities (for example, offering consulting services and e-learning courses relevant to the content; selling advertising spaces on the Toolkit for relevant products/services); and
3. allocate appropriate funds and attention toward addressing website branding and outreach materials/time, periodic website revamps and technological improvements.

C) Lessons for web-based portals

The literature on knowledge management often discusses general principles, such as understanding drivers and incentives for knowledge sharing, building trust, understanding differences in power, and deployment of appropriate communications vehicles and technologies.

Based on a series of expert informant interviews and small group discussions within UNDP, as well as IISD's own experience in conducting evaluations of networks and knowledge exchange processes, the following general observations might be helpful in considering how to develop online platforms that attract and engage local-level actors.

1. Understanding subsidiarity in the context of knowledge exchange

Knowledge exchange may be most effective at the level where the knowledge is to be directly used. In the case studies above, considerable effort was made to work with the local actors to determine what they already know, what their information needs are and what their capacity is for peer-to-peer knowledge exchange. Understanding local needs, context and application is an essential starting point to develop online platforms that support local-to-local knowledge exchange.

2. Personal connection within two degrees of connection

Fostering knowledge exchange appears to work best between those who are most immediately connected either to each other or to strong, well-known intermediaries ("connectors", as Malcolm Gladwell would call them[xii]). People who know each other and like or respect each other are more likely to want to communicate with each other.

In the Uganda Community Knowledge Workers (CKW) project, for example, the CKWs are themselves local farmers who are known to the communities. In the Lao Forest livelihoods work, the village exchanges that helped people get to know each other were an essential step in sharing new livelihood opportunities.

If a 1st or 2nd degree of connection is not present, it needs to be established through personal emails, face-to-face meetings, use of strong connectors (i.e. other participants they know in common), and other means. This can also be considered as building the social capital within the group).

It follows, however, that using online portals to connect local actors across regions and countries and/or with international development practitioners will be even more challenging, given the additional degrees of separation.

3. Identifying and working with bridging organizations

In our research for UNDP, we observed that a bridging organization – either a local, national or international agency -- was usually needed for mobilizing local-level knowledge. These bridging organizations provide an arena for knowledge co-production, trust building, sense making, learning, vertical and horizontal collaboration and conflict resolution. They also link local issues to policy forums.

One of the tasks of the bridging organizations is to enable social learning – the process of iterative reflection that occurs when experiences and ideas are shared with others. This occurs most efficiently through joint problem-solving and reflection. Efforts to mobilize local knowledge for the purposes of increasing impact and replicating elsewhere need to look more carefully at the role of bridging organizations to assist in that process.

4. Articulating, promoting and respecting "value" in knowledge exchange

The literature and practice of knowledge management deals at length with the challenge of "incentives" or mechanisms to encourage or persuade an actor to participate in knowledge sharing. But let us sharpen this debate by considering the real value of the exchange:

- Does the participant know *what they have that is valuable* to share?
- What *value* will a participant gain personally and directly from his/her participation, that will benefit his/her work or livelihood?
- What is s/he willing to *take the time to share* in order to get that value in exchange?

Serious consideration also needs to be given to the *ownership of knowledge and innovation*. There is potentially a disconnect between local-level actors (e.g. entrepreneurs who make (or want to make a living from the new technologies, systems and processes they have created) and development practitioners and open-source/access-to-knowledge advocates who believe that all knowledge is for the greater public good and the open-sharing of knowledge is key to innovation.

In scaling up or replicating a locally developed process, will the local innovators be compensated in any way to ensure equity?

5. Building knowledge sharing skills

Knowledge managers often assume that their target actors know intuitively how to share their knowledge: if the right forum (e.g. meetings, online platforms,) and tools (e.g. reporting templates.) are provided, those actors will know what to do. But this is not always the case. Capacity building on knowledge-sharing approaches and tools for the target actor group is a core, ongoing, long term, responsibility of any knowledge manager.

6. Deploying a wide variety of communications approaches

In our research for UNDP, we observed that a wide variety of communications tactics, processes and tools are deployed to mobilize local knowledge. There is no "one-stop shop" online model that has proven to be successful in achieving knowledge exchange along the full continuum of local-level engagement for local problem-solving (See Table 1 above).

7. Managing expectations: 1-9-90 and Dunbar's number

Even within the first and second levels of personal connection, not all actors will actually contribute to the knowledge sharing process. Expectations among knowledge managers for 100% participation are unrealistic. In fact, well-established research[xiii] on interaction in large chat rooms suggests that the norm is that:

- 1 % of the membership will do most of the interaction;
- 9% of the participants will contribute a little,
- while 90% will "lurk" or listen in on the conversation.

Our experience with the Entrepreneur's Toolkit project confirms this 1-9-90 rule in that user-generated contributions typically account for a very low percentage of the actual traffic.

Instead, knowledge managers using online VPs should set more realistic targets, perhaps aiming for 25% or 30% participation, and they should only become concerned when participation drops below the 10% mark.

"Dunbar's number" also comes into consideration: Dunbar posited in 1992 that there is a maximum of 100 to 200 stable social relationships[xiv] that any one person can sustain. Research in the social networking context has produced data that agrees with Dunbar's result.

This suggests that our 'economy of attention' is just as limited in the online world by cognitive and biological constraints as predicted by Dunbar's theory"[xv].

Network coordinators need to be fully invested in building their community – but they must also recognize that there is a practical limit to the number of relationships that a coordinator can sustain. Moreover, one should not expect serious engagement from other participants if they already have extensive, stable connections elsewhere, whether on other platforms or elsewhere.

8. The monitoring and evaluation challenge

An ongoing challenge of monitoring and evaluating knowledge-sharing work it that development evaluators tend to focus more on "results on the ground" rather than assessing the value of the process itself, as this may be demonstrated through changes in behaviours and the relationships of those engaged in sharing knowledge.

More work is needed to demonstrate the value of knowledge sharing in terms of benefits back to the local actors. Greater clarity on what constitutes a return on investment in knowledge sharing is also needed.

D) Post-Learning Forum Reflections

In reviewing this paper after the February 2012 Learning Forum, we are struck by three emerging ideas that are relevant to supporting local-level knowledge sharing:

- the need for a better understanding and "profile" of the skills necessary for effective knowledge facilitation;
- the need for long term, sustained engagement of the knowledge facilitator/creator of the virtual platform; and
- the value of open-access and open-learning policies and practices within organizations, which provide the enabling environment for the successful development and implementation of virtual platforms.

The most significant new perspective that we gained from the event, however, was the importance of institutional change in opening up access to knowledge.

Institutional cultures can become significant barriers to the effective and timely sharing of an institution's knowledge; and bringing in outside knowledge, including from the local level, may significantly challenge or change an institution's work.

More work is needed to understand the process of institutional change that results from opening up knowledge processes. And a central new question to explore is "how to measure the impact of knowledge sharing in terms of changes within institutions".

Endnotes

[i] The paper draws on two recent activities within IISD's Global Connectivity Program:

- a scoping study conducted on behalf of UNDP's local capacity building program, to identify experiences at other organizations and programs on the process of local-level knowledge mobilization [not yet published]; and
- support being provided to the SEED Initiative (an award and capacity-building partnership of UNEP, UNDP and IUCN) to foster peer learning and knowledge exchange among developing-country social and environmental entrepreneurs working at the local level.

[ii] Adapted from a draft study by Ben Akoh, IISD, for the African Development Bank on ICTs and adaptation.

[iii] http://www.grameenfoundation.org/sub-saharan-africa/uganda.

[iv] http://mtn.co.ug/About-MTN/News-Room/2009/June/MTN-partners-with-Google-and-G.aspx.

[v] http://www.grameenfoundation.org/sub-saharan-africa/uganda

[vi] Discussions with CKW/Grameen Foundation Project Manager, Held July 2011.

[vii] Case note contributed by Michelle Laurie, IISD consultant, excerpted and summarized from the final study report by Andrew W. Ingles, Sounthone Kethpanh, Andy S. Inglis and Khamphay Manivong, IUCN 2006. (with supplemental correspondence with Andrew Ingles).

[viii] Ingles.

[ix] Contributed by IISD Associate, Leslie Paas.

[x] Wikipedia is a free online encyclopedia that draws its content base from voluntary contributions. Since being founded in 2001,Wikipedia has attracted over 82,000 active contributors working on more than 19,000,000 articles in more than 270 languages (source: http://en.wikipedia.org/wiki/Wikipedia:About – August, 2011).

[xi] The first report in a three year study into strengthening triple bottom line performance among micro enterprises can be found at http://www.seedinit.org/en/best-practices-and-policy/seed-reports.html.

[xii] Gladwell, Tipping point.

[xiii] Nielson, Participation inequality.

[xiv] Goncalves, B., Perra, N., Vespignani, A. (2011-05-28). "Modeling Users' Activity on Twitter Networks: Validation of Dunbar's NumberPLOS August 2011 I Volume 6 I Issue 8 I e22656.

[xv] Goncalves.